DIETETIC ANALYSIS OF NORTH INDIAN DIABETICS

(Non-core study of WHO multinational Study of Vascular Diseases in Diabetes)

The diet consumed by different populations in the world varies a great deal with the geographic location and the reasons for this may include :

a) Type of soil and agricultural cropping system. Staple diets in developing countries consist of cereals. Its consumption in the refined or coarse form depends on socio-economic state, accustomed habits of the community and many other local factors.

b) Cultural and religious practices account for vegetarianism in certain communities. Butter fat or hydrogenated fats rather than animal fat is the usual cooking fat and similarly other food items have social or a religious significance in many communities.

c) Family score determines the preference in sharing of food, traditionally a female householder in an Indian family will be the last person to have the meal, so that left over portions are only available to her.

Basically it is recognized that per capita income determines the qualitative aspects, bulk of staple food in India is from cereals as these are cheapest items.

Material & Methods

In a non-core study as part of questionnaire dietary history was elicited from each patient. This consisted of information on the kind of diet prescribed and followed by the patient knowing his diabetic state. Details were worked out on the total calories and its constituents, e.g. carbohydrates, fats, proteins. Protocols were detailed in the general descriptions of this study[1].

Results

The main finding of our centre are presented here. The results of analysis of total calories, carbohydrate content of diet being followed by diabetics at this clinic is indicated in Table 1. The diabetics are, usually advised per day 1500-2000 C diets, carbohydrate content being 200-250 g, with adjustment being made for higher protein allowance and restriction of fats.

TABLE I

Distribution of total calories and CH_2O/day in W.H.O. Study (Non-Core)

Total calories/ day	Number of diabetics	Carbohydrates g/day	Number of diabetics
1000-1499	106	120-199 g	94
1500-1999	168	200-249 g	140
2000 & >	35	250 & >	75

In the diabetic diet prescription from this clinic emphasis is given on the total calories allowance, that will achieve optimum weight for the height.

Wheat/rice are the main cereals and form the bulk of staple food in this population. This is often supplemented by vegetables and lentils. Protein intake, animal fat and refined sugar consumption is low in this region. The average constituents were carbohydrate component of 60%, fats 25% and proteins 15%.

Discussion

In a collaborative national study by Indian Council of Medical Research[2] on prevalence of diabetes, 34,194 person were screened and the analysis of diabetic habits by recall method indicated that 50% of population was consuming 1500-2000 calories, 12.5% < 1500 calories/day and 37.5% > 2500 calories/day. Of the total calories 60-70% were from carbohydrates, 15-30% from fats (saturated fat constituted 30-40% and 10% were from protein sources. As compared to rural populations, though mean calories are similar, it was lower in carbohydrate and fat content; In the rural setting carbohydrate being 70% and fats 17%[3].

The difference between the Western diets and Indian urban diet is indicated in Table II.

TABLE II

Dietetic profile variation-Western vrs. Indian diets

Parameter/Food item	Western diet	Indian diet	Food consti-tuent	Western diet % of calories	Indian diet % of calories
K cal/kg.	40-45	25-30			
Distribution	Low cereal and high fat	High cereal and low fat	CH_2O	35-45	55-70
Saturated fat (proportion of total fat)	2/3	1/3	Fats	40-50	15-30
Refined sugar/ intake per day	45 g	15 g or <	Proteins	20-25	10-15
Fibre content intake/day	5-10 g	15-20 g			

In this non core study effectiveness of dietary therapy was judged by adherence to the prescribed scheduled (Table III). This was forthcoming in 60%. Assessed by normalized blood glucose pursuing diet in addition to drug therapy for diabetics was so in 45% of diabetics analysed here.

TABLE III

Effectiveness of diet

*	Adherence to diet	60%
*	Euglycaemia	45%
*	Complications : arterial disease	20%
*	Relation to BMI/or serum lipids	N.S.

Relatively low calorie consumption/day and especially low fat content (< 30% calories from fat) did not seem to provide protection from the arterial disease in Indian diabetics, i.e. this complication was observed in 20% of the cases under review here. Comparison of population characteristics from Framingham study and Indian study relating caloric intake, amount of fat consumed, body weight, urbanization seem to relate body weight to the diabetic vascular disease[4].

Attempt was made in this study to correlate total caloric intake to body mass index and serum lipid values. No significant inter-relationship was forthcoming between these parameters, perhaps within the range of present allowances it did not seem contributory to the subtle alterations in either index.

Summary

Study of dietetic analysis of Indian diabetics attending clinic indicates total caloric intake of <2000 C/day, carbohydrates being the major constituent, fats are less than 30% of total, refined sugar 15 g or less.

In diet therapy, adherence is only in 60% while effectiveness as assessed by normalization of blood glucose was forthcoming in 45% of the clinic diabetes.

The arterial disease is present in 20% diabetics and seemed unrelated to the allowance of calories and as dietary pattern followed by these patients here.

References

1. Jarrett R.J., Keen H. and Grabauskas (1979). The W.H.O. Multinational study of vascular disease in diabetes. 1. General description. Diabetes Care 2, 175.

2. Ahuja M.M.S. (1979). Epidemiological studies on diabetes in India. In "Epidemiology of Diabetes in Developing Countries". Ed. Ahuja, M.M.S. Interprint; New Delhi, p. 29.

3. Ahuja M.M.S., Sivaji L., Garg V.K. & Mitroo P. (1972). Prevalence of diabetes in North India (Delhi area). Horm. Met. Res. 4, 321.

4. Ahuja M.M.S., Kapoor S.K., Menon N., Malhotra S.C., Kumar V. (1976). A study of factors in relation to vascular disease in Indian diabetics. Indian J. Med. Res. 64, 1351.